



PCI-SIG ENGINEERING CHANGE NOTICE

TITLE:	FC Init
DATE:	Dec 11, 2003; Updated 26 Mar 2004
AFFECTED DOCUMENT:	PCI Express Base Specification Revision 1.0a
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Part I

1. Summary of the Functional Changes

This ECR proposes modifications to the FC init protocol sections of the Base Specification that clarify the requirements regarding the permitted intervals and interruptions related to the protocol.

2. Benefits as a Result of the Changes

Clarification/correction of FC Init requirements & improves implementation flexibility.

3. Assessment of the Impact

No significant negative impact. Clarifies allowance of implementation flexibility.

4. Analysis of the Hardware Implications

No significant negative impact. Clarifies allowance of implementation flexibility.

5. Analysis of the Software Implications

None.

Part II

Detailed Description of the change

In Section 2.6.1. (building on errata C17):

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- ❑ A received TLP using a VC that is not enabled is a Malformed TLP
 - VC0 is always enabled
 - For VCs 1-7, a VC is considered enabled when the corresponding VC Enable bit in the VC Resource Control Register has been set to 1b, and once FC negotiation for that VC has exited the FC_INIT1 state and progressed to the FC_INIT2 state (see Section 3.3)
 - This is a reported error associated with the Receiving Port (see Section 6.2)

- ❑ TLP transmission using any VC 0-7 is not permitted until initialization for that VC has completed by exiting FC_INIT2 state

~~Note that TLP transmission for any VC should be postponed until the FC_INIT2 state is exited, because otherwise there is a risk that the receiving component on the other side of the Link will discard the TLP on reception (VC0—see Section 2.9.1) or handle the TLP as a Malformed TLP (VCs 1-7).~~ For VCs 1-7, software must use the VC Negotiation Pending bit in the VC Resource Status Register to ensure that a VC is not used until negotiation has completed by exiting the FC_INIT2 state in both components on a link.

In 3.3 Flow Control Initialization Protocol, edit text & delete Figure 3-3:

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The rules for this process are given in the following section. ~~Figure 3-3 shows a flowchart of the process.~~

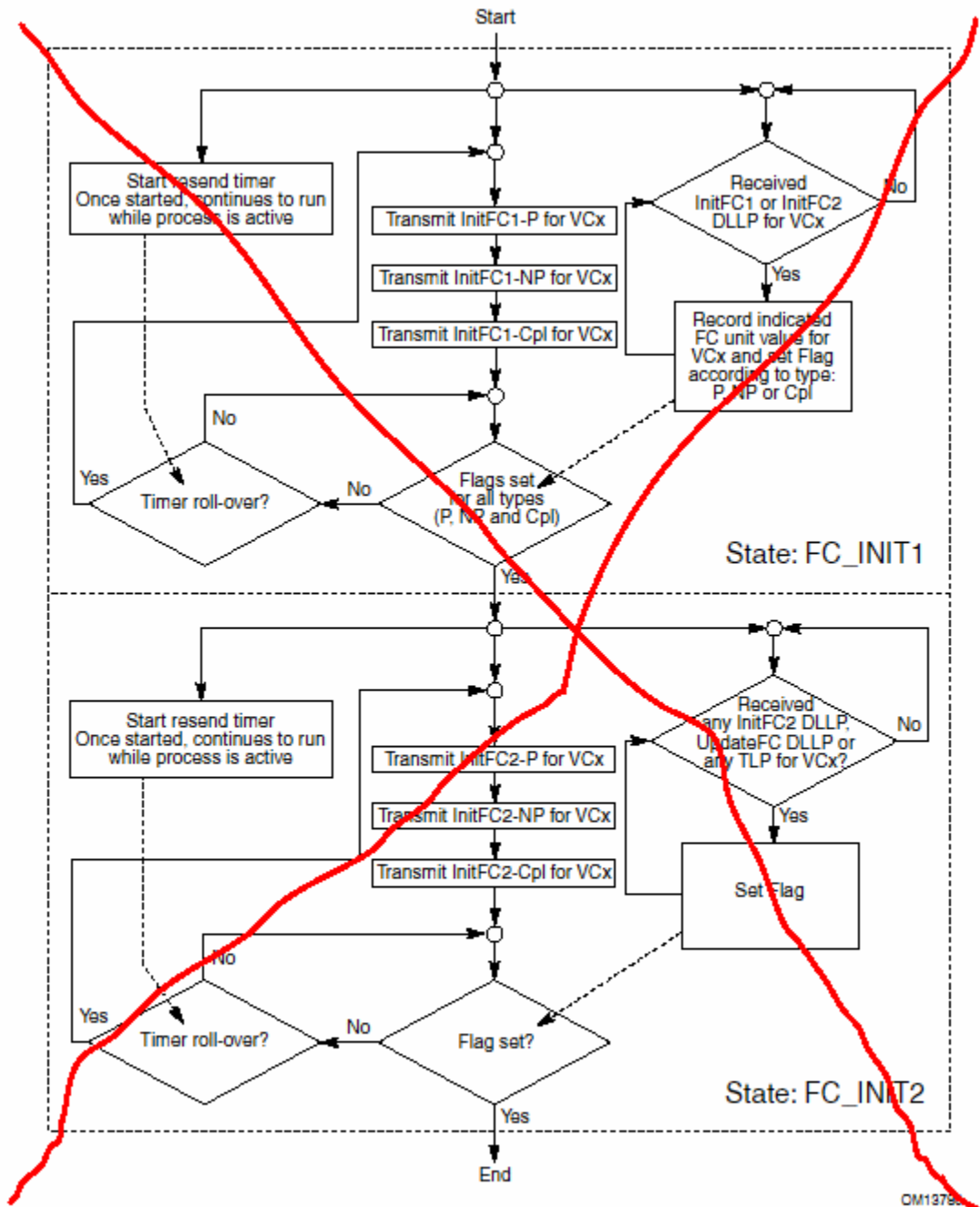


Figure 3-3: Flowchart Diagram of Flow Control Initialization Protocol

In 3.3.1 Flow Control Initialization State Machine Rules, edit as shown:

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- While in FC_INIT1:
 - ◆ Transaction Layer must block transmission of TLPs using VCx
 - ◆ Transmit the following ~~uninterrupted sequence of~~ three ~~successive~~ InitFC1 DLLPs for VCx in the following relative order pattern:
 - InitFC1 – P (first)
 - InitFC1 – NP (second)
 - InitFC1 – Cpl (third)
 - ◆ ~~Repeat this InitFC1 DLLP transmission sequence as follows:~~
 - ~~For VC0, transmit continuously at the maximum rate possible on the Link (resend timer value is 0)~~
 - ~~For VCs other than VC0, repeat the sequence when no other TLPs or DLLPs are available for Transmission, but no less frequently than at an interval of 17 μ s (0%/+100%), measured from the start of transmission of the preceding sequence~~
 - ◆ The three InitFC1 DLLPs must be transmitted at least once every 34 μ s.
 - Time spent in the Recovery LTSSM state does not contribute to this limit.
 - It is strongly encouraged that the InitFC1 DLLP transmissions are repeated frequently, particularly when there are no other TLPs or DLLPs available for transmission.
 - ◆ Except as needed to ensure ...

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- While in FC_INIT2:
 - ◆ Transaction Layer must block transmission of TLPs using VCx
 - ◆ Transmit the following ~~uninterrupted sequence of~~ three ~~successive~~ InitFC2 DLLPs for VCx in the following relative order pattern:
 - InitFC2 – P (first)
 - InitFC2 – NP (second)
 - InitFC2 – Cpl (third)
 - ◆ ~~Repeat this InitFC2 DLLP transmission sequence as follows:~~
 - ~~For VC0, transmit continuously at the maximum rate possible on the Link (resend timer value is 0)~~
 - ~~For VCs other than VC0, repeat the sequence when no other TLPs or DLLPs are available for Transmission, but no less frequently than at an interval of 17 μ s (0%/+100%), measured from the start of transmission of the preceding sequence~~
 - ◆ The three InitFC2 DLLPs must be transmitted at least once every 34 μ s.

- Time spent in the Recovery LTSSM state does not contribute to this limit.
- It is strongly encouraged that the InitFC2 DLLP transmissions are repeated frequently, particularly when there are no other TLPs or DLLPs available for transmission.

◆ Except as needed to ensure ...

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-- end of change --